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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/739,817	12/20/2000	Kantaro Miyano	P20402	4059
7055	7590	01/20/2004	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			LEE, JOHN J	
			ART UNIT	PAPER NUMBER
			2684	
			DATE MAILED: 01/20/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p>09/739,817</p>	<p>Applicant(s)</p> <p>MIYANO ET AL.</p>	
	<p>Examiner</p> <p>JOHN J LEE</p>	<p>Art Unit</p> <p>2684</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6,7,9,11-13,15 and 18 is/are rejected.
- 7) ☒ Claim(s) 3,5,8,10,16 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's arguments with respect to claims 1 – 13 and 15 - 18 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1, 2, 4, 6, 7, 9, 11-13, 15, and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Weerackody (US Patent number 5,305,353) in view of Muramoto et al. (US Patent number 6,538,608).

Regarding **claim 1**, Weerackody discloses that a radio transmission apparatus (Fig. 4A and abstract). Weerackody teaches that an antenna (Fig. 2) having first (55 in Fig. 4A) and second linear polarization antenna (55 in Fig. 4A) elements (column 5, lines 50 – column 6, lines 20). Weerackody teaches that modulator (30 in Fig. 4A) that modulates transmission data to output a modulated signal (Fig. 4 and column 4, lines 65 – column 5, lines 20). Weerackody also teaches that a phase controller (30 in Fig. 4A) that shift a phase of said modulated signal (30 through 55 in Fig. 4A) by one of 0 degrees and 180 degrees according to a value of the transmission data per bit (column 7, lines 22 – column 8, lines 46 and Fig. 5 where teaches according to the transmission data rate repetition code (providing two code symbols), the processor shift a phase of modulated signal by one of 0 and π (180 degrees)).

Weerackody does not specifically disclose the limitation “first and second linear polarization antenna elements perpendicular to each other”. However, Muramoto discloses the limitation “first (2 in Fig. 5) and second linear polarization antenna elements (3 in Fig. 5) perpendicular to each other” (Fig. 5, 9, column 4, lines 21 – 34, and column 5, lines 43 – 58). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the structure of Weerackody as taught by Muramoto. The motivation does so would be to improve data signal transmitting/receiving reliability and enhance dual polarization antenna symmetric radiation patterns by perpendicular shape in wireless communication system.

Regarding **claims 2 and 4**, Weerackody does not specifically disclose the limitation “first and second linear polarization antenna elements are positioned with longitudinal directions thereof crossing and having an angle”. However, Muramoto discloses the limitation “first and second linear polarization antenna elements are positioned with longitudinal directions thereof crossing and having an angle” (Fig. 5, 9, column 4, lines 21 – 34, and column 5, lines 43 – 58). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the structure of Weerackody as taught by Muramoto. The motivation does so would be to improve data signal transmitting/receiving reliability and enhance dual polarization antenna patterns for quality signal in wireless communication system.

Regarding **claim 6**, Weerackody and Muramoto disclose all the limitation, as discussed in claim 1. Furthermore, Weerackody further discloses that spreader (52 in Fig.

Art Unit: 2684

4A) that spreads said modulated signal to output a spread signal (Fig. 4A column 3, lines 63 – column 4, lines 3).

Regarding **claim 7**, Weerackody and Muramoto disclose all the limitation, as discussed in claims 1 and 2.

Regarding **claim 9**, Weerackody and Muramoto disclose all the limitation, as discussed in claims 1 and 4.

Regarding **claim 11**, Weerackody and Muramoto disclose all the limitation, as discussed in claim 1. However, Weerackody does not specifically disclose the limitation “a switch that switches a destination of said modulated signal between said first antenna element and said second antenna element”. However, Muramoto discloses the limitation “a switch (5 in Fig. 15) that switches a destination of said modulated signal between said first antenna element and said second antenna element” (Fig. 15 and column 4, lines 5 – 34). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Weerackody as taught by Muramoto. The motivation does so would be to improve a transmitting/receiving control for desired output/input quality signals in wireless communication system.

Regarding **claim 12**, Weerackody and Muramoto disclose all the limitation, as discussed in claims 6 and 11.

Regarding **claim 13**, Weerackody and Muramoto disclose all the limitation, as discussed in claims 1 and 11.

Regarding **claim 15**, Weerackody and Muramoto disclose all the limitation, as discussed in claims 1 and 6. Furthermore, Weerackody further discloses that an electric field strength detector that detects a received electric field strength (the strength of received signals) of said plurality of signals (column 1, lines 21 – 59 and Fig. 3 where teaches the receiver performs to determine low signal strength and high signal strength as received a plurality of signal strength from transmitters. Without a detector for received signal strength, the receiver cannot operate). Weerackody discloses that determiner that performs a data determination by associating a magnitude of said received electric field strength detected by said electric field strength detector with data (column 3, lines 49 – column 4, lines 33 and Fig. 3 where teaches when the receiver received the weakness of received signal energy that communicated change slowly, the receiver determines a technique (providing a channel code symbols to use to antennas) can be used to reduce the deep fades).

Weerackody does not specifically disclose the limitation “a receiver that receives a plurality of signals transmitted with different polarization planes”. However, Muramoto discloses the limitation “a receiver that receives a plurality of signals transmitted with different polarization (vertical and horizontal polarized waves) planes” (Fig. 5, 18 and column 4, lines 5 – 34). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Weerackody as taught by Muramoto. The motivation does so would be to enhance data signal adaptability of antenna system in wireless communication system.

Regarding **claim 18**, Weerackody and Muramoto disclose all the limitation, as discussed in claims 1 and 6.

Allowable Subject Matter

4. Claims 3, 5, 8, 10, 16, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to disclose the limitation “first and second linear polarization antenna elements are indicative of twisted positions, while with respect to data at the time of weak electric field strength, inverting the data at the time of strong electric field strength to make a determination, and an X-NOR gate receiving as its input an output of the D-flip flop and the judged result and a transmission signal by a reference signal to multiply a signal that inverts a polarity of said transmission signal corresponding to said reference signal” as specified in the claims.

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

Art Unit: 2684

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gould (US Patent number 5,568,158) discloses Electronic Variable Polarization Antenna Feed Apparatus.

Rittenbach et al. (US Patent number 4,649,393) discloses Phased Array Antennas with Binary Phase Shifters.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 308-9051, (for formal communications intended for entry)

Or:

(703) 308-6606 (for informal or draft communications, please label
"PROPOSED" or "DRAFT").

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Art Unit: 2684

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John J. Lee** whose telephone number is **(703) 306-5936**. He can normally be reached Monday-Thursday and alternate Fridays from 8:30am-5:00 pm. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, **Nay Aung Maung**, can be reached on **(703) 308-7745**. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4700.

J.L
January 9, 2004

John J Lee


NAY MAUNG
SUPERVISORY PATENT EXAMINER